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CLAIMS:

What is claimed is:

1. An apparatus for electro-chemically depositing a metal film on a substrate having a metal seed layer, comprising:
 - a substrate holder for holding the substrate;
 - an electrolyte cell for receiving the substrate in a processing position; and
 - an actuator connected to the substrate holder for adjustably positioning the substrate relative to the electrolyte cell to provide a desired uniformity of metal film deposition depth.
2. The apparatus of claim 1, further comprising a metal deposition portion that provides for deposition of the metal film on the seed layer on the substrate.
3. The apparatus of claim 1, wherein the adjustably positioning comprises displacing the substrate holder in a substantially vertical direction.
4. The apparatus of claim 1, further comprising a sensor that senses the electric current density across the seed layer.
5. The apparatus of claim 1, wherein the electrolyte cell further comprises a body portion and an overflow portion, the overflow portion defines an opening for receiving the substrate in its processing position, and the substrate holder adjustably positions the substrate relative to the body portion.
6. The apparatus of claim 4, wherein the adjustably positioning comprises bowing the substrate.
7. A method of controlling uniformity in a deposition depth of a metal film from

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the center of the seed layer on a substrate to the periphery of the seed layer on the substrate, the method comprising:

inserting a substrate having a seed layer into an electrolyte cell; and

adjusting the position of the seed layer within the electrolyte cell to provide a
5 desired uniformity of the metal film deposition depth.

8. The method of claim 7, wherein said adjusting the position comprises adjusting the vertical height of the substrate within the electrolyte cell.

10 9. The method of claim 7, further comprising determining the uniformity in deposition depth of metal film deposited on the seed layer for a substrate in a plurality of positions from the center of the substrate to the periphery of the substrate.

10 10. The method of claim 7, wherein said adjusting the position comprises adjusting the bowing of the substrate.

11. The method of claim 7, wherein the sensing the uniformity of the electric current density is performed after the substrate has been removed from the electrolyte cell.

20 12. The method of claim 7, wherein the adjusting the position comprises adjusting the horizontal position of the substrate within the electrolyte cell.

13. A method for electro-chemically depositing a metal film on a substrate having a metal seed layer, the method comprising:

25 disposing the substrate in an electrolyte cell that is configured to receive the substrate; and

adjustably positioning the substrate relative to the electrolyte cell.

14. The method of claim 13, further comprising determining the uniformity of the

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deposition depth of metal film on the substrate along a radius from the center of the substrate to the periphery of the substrate.

11/ 15. The method of claim 14, wherein the determining the uniformity of the
5 deposition depth of the metal film includes measuring the thickness of the metal film.

Subay 10 16. The method of claim 13, wherein the electrolyte cell has a body portion and an overflow portion, the overflow portion defines an opening for receiving the substrate in a processing position, the adjustably positioning of the substrate is performed relative to the body portion of the electrolyte cell.

17. The method of claim 13, wherein the adjustably positioning comprises adjusting the vertical height of the substrate.

15 18. An apparatus for electro-chemically depositing a metal film on a substrate having a metal seed layer, comprising:
a substrate holder;
an electrolyte cell; and
actuator means for adjustably positioning the position of the substrate holder
20 relative to the electrolyte cell to provide a desired uniformity of metal film deposition depth.

19. A method for controlling uniformity of deposition rate of a metal film on a substrate, the method comprising:
25 disposing the substrate in an electrolyte cell; and
adjustably positioning the substrate relative to the electrolyte cell to control said deposition rate.

20. The method of claim 19, further comprising measuring the deposited metal film

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to determine the deposition rate of the metal film on the seed layer on the substrate.

21. The method of claim 19, wherein the adjustably positioning comprises adjusting the vertical height of the substrate relative to the electrolyte cell.

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22. The method of claim 19, wherein the adjustably positioning comprises adjusting the lateral position of the substrate relative to the electrolyte cell.

23. The method of claim 19, wherein the adjustably positioning comprises adjusting the curvature of the substrate.

24. The method of claim 19, further comprising determining the uniformity of the deposition layer by measuring the thickness of the metal film.

15 25. An apparatus for electro-chemically depositing a metal film on a substrate having a metal seed layer, comprising:

a substrate holder for holding the substrate;

an electrolyte cell for receiving the substrate in a processing position, wherein the electrolyte cell further comprises a body portion and an overflow portion, the overflow portion defines an opening for receiving the substrate in its processing position, and the substrate holder adjustably positions the substrate relative to the body portion;

20 an actuator connected to the substrate holder for displacing the substrate holder in a substantially vertical direction to adjust the position of the substrate relative to the electrolyte cell to provide a desired uniformity of metal film deposition depth; and

25 a metal deposition portion that provides for deposition of the metal film on the seed layer on the substrate.

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